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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/755,846	01/12/2004	Wolfgang Singer	637.0003USQ	8440

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EXAMINER

VANORE, DAVID A

ART UNIT PAPER NUMBER

2881

DATE MAILED: 08/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/755,846

Applicant(s)

SINGER ET AL.

Examiner

David A. Vanore

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/15/06.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 and 36-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 33 is/are allowed.
- 6) ☒ Claim(s) 1 and 36-41 is/are rejected.
- 7) ☒ Claim(s) 2-32 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 10/201,652.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: EUV Illumination system having plural light sources and rastering optical element.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 36-41 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Miyake et al. (USPN 6,038,279)
4. Regarding claims 1 and 36-41, Miyake et al. teaches an x-ray exposure apparatus, where x-rays have a wavelength less than or equal to 193 nanometers, comprising first and second light sources illustrated in Fig. 1 which illuminate different areas of optical element Item 11 (Col. 5), and an optical element (Items 3 or 10) which collect and condense light onto a reticle (Item 4) in a reticle plane, an illumination system (Item 3 and 14) for illuminating the plane, a carrier system (Item 8), a projection optical system which images the reticle (or mask) onto a light sensitive substrate (Item 6) to expose said substrate and thereby expose a pattern into said substrate, and performs the same essential function as a projection objective lens.

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5. The light sources (Items 9) illuminate different areas of optical element Item 11 at different points and comprise two separate laser sources, thus providing light under two separate and different operating conditions, where the system superimposes light beams from the sources, illustrated in Fig. 1, to reduce coherence of the illumination system (Col. 5 Lines 61-68).

6. Regarding claim 41 in particular, since the point of irradiation of optical element 11 of the two separate light sources (Item 9) are independently controlled, as one point is fixed and the other moved over the surface, the response of the optical element changes in that the type and temperature of plasma generated varies until the optical element reaches steady state at the region of exposure. This causes the generation of x-rays of wavelengths other than those generated at a point where the beam is kept in fixed irradiation position. Further, Miyake et al. teaches that the irradiation of the optical element creates two points of plasma generation where x-rays are generated. X-rays comprise a broad portion of the electromagnetic spectrum comprising a plurality of wavelengths. Therefore, the plasma emits x-rays having wavelengths in the range of 1 Angstrom to 10 nanometers, which is the generally held spectral band for radiation classified as x-rays.

Allowable Subject Matter

7. Claim 33 is allowed.

8. Claims 2-32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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9. The following is an examiner's statement of reasons for allowance:
10. The prior art fails to teach or suggest the plural light sources recited in claim 1 and 33, where the optical element comprises a raster element which combines separate light bundles into a single light bundle as recited in claim 33, or where the raster element partitions light from the first and second source into plural light channels as recited in claim 2.
11. Claims 3-32 depend on claim 2 and are therefore allowable by virtue of their dependency.
12. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Vanore whose telephone number is (571) 272-2483. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (571) 272-2477. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


David A Vanore
Patent Examiner
Art Unit 2881

dav